When Inter-ethnic Botanical Borrowing does not rely on Obvious Efficacy: Some questions from Western Amazonia

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Research

Abstract

Inter-ethnic botanical borrowing is usually deemed to be based on pragmatic efficiency. However, in the regional system we discovered between several indigenous groups from the Peruvian rainforest, the transfer of ethnomedicinal knowledge relies much more on relational factors than on any kind of strictly therapeutic efficacy. This is clearly substantiated by a detailed comparison between objective ethnobotanical measurements and indigenous self-assessments recorded by anthropologists. Such alternative motivations for ethnobotanical borrowing are probably not so exceptional. They raise some questions about the representation of plant efficiency from an indigenous point of view, and probably in some Western contexts too. They also entail direct implications for development and cooperation policies.

Resumen

Según la opinión corriente, los préstamos botánicos a nivel interétnico se deben a razones de eficiencia pragmática. Sin embargo, en el sistema regional que descubrimos entre varios grupos indígenas de la Selva Central Peruana, la adopción de nuevos conocimientos etnomedicinales depende de factores relacionales mucho más que de cualquier clase de eficacia estrictamente terapéutica. Queda claramente comprobado al comparar detalladamente las medidas objetivas de los etnobotánicos y las auto-evaluaciones indígenas recogidas por los antropólogos. Es probable que ese tipo de motivaciones alternativas para los préstamos etnobotánicos no sean realmente excepcionales. Esto cuestiona la representación usual de la eficiencia de los remedios vegetales, del punto de vista indígena pero quizás también en algunos contextos occidentales, y tiene implicaciones directas para las políticas de desarrollo y cooperación.

Introduction

Inter-ethnic borrowing is (and has probably always been) a basic feature of ethnobotanical and ethnomedicinal knowledge among Western societies as well as among all others (Balick 1995, Barrera 2002, Lewis 1992, Schiebinger 2005). The reason seems to be obvious: some plants used by neighboring or distant peoples are more efficient from a medicinal, agricultural or economic standpoint, so that any kind of contact and travel should be a good opportunity to turn them to pragmatic advantage. However, such a strictly utilitarian interpretation is probably due to Western history and prevailing categories of thought, and disregards other crucial aspects of the issue.

My concern here is with an example of ethnomedicinal borrowing processes between various indigenous peoples from the Departments Ucayali and Madre de Dios, in the Peruvian rainforest. In this particular case borrowing works as a single sizeable regional system, and presents a curious peculiarity: sharp contradictions between anthropological findings and ethnobotanical measurements substantiate that the mainspring of this system is not

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grounded in therapeutic efficacy, or rather, in what Western biomedicine would call so. In this case, therapeutic efficacy seems to have another sense: it is grounded in relationships and in persons – human people and vegetal beings. This paper aims at highlighting and understanding a little better another (often disregarded) dimension of ethnobotanical borrowing processes.

Ethnological background

All my illustrations are drawn from a research program that was carried out from 1997 to 2000, on both sides of the Brazil-Peru border, in the Amazonian rainforest. From the beginning, our work was expected to lead to the topic of ethnobotanical borrowing, since the purpose was to analyze the dynamics of change and transfer of environmental knowledge among six neighboring indigenous peoples – first within each ethnic group (stressing the chances of trans-generational transmission) and further between all of them (stressing inter-ethnic exchange and influences).

These six indigenous peoples (Figure 1) are the Ashéninka (Arawakan ethno-linguistic group), the Shipibo-Conibo, the Yaminahua, Chitonahua and Yora, and the Amahuaca (Panoan ethno-linguistic group). Some idea about the historical, geographical and interethnic context could be useful.

The Ashéninka and Asháninka are numerous (above 51,000 - INEI 1993). They belong to the Arawakan ethnolinguistic group and dwell in the Peruvian “Selva Central”, with some territorial extensions going across the Brazilian border. I personally worked with two north-eastern subgroups, Ashéninka del Gran Pajonal (3,823 persons) and Ashéninka del Ucayali (above 3,500 persons), in the Peruvian Department Ucayali and the Brazilian State of Acre.

The latter are called “del Ucayali” or “Ucayalinos”, but despite their name, their actual settlement on the upper Ucayali (and later in Brazil) probably goes back to a rather recent time, namely the rubber boom in the late 19th to early 20th centuries. Coming from the next western and southern hill regions, they turned the subsequent political, demographic and territorial upheavals to their advantage, and settled between two other ethnic groups who were by contrast genuine riverine people, and formerly had adjacent territories: the Conibo-Shipibo downstream and the Yine-Piro upstream.

All of the other indigenous peoples we worked with are Panoan, but they present contrasting cultural features and history. The Conibo-Shipibo also form a large indigenous group (more than 20,000 people in 1993 – INEI 1993), settled for centuries on the great river banks of the middle Ucayali, the main artery of the region, and some of its tributaries. Currently they often live near Peruvian settlements and cities.

The Yaminahua, Chitonahua and Yora are small ethnic groups, with close linguistic and cultural ties. Traditionally, they lived scattered in headwater regions. They were successively drawn to sedentary settlements in rather recent times, after an “isolation” of many ages in the forest. Permanent contact with the Yaminahua (around 400 people in 1998 – SIL 2006) occurred in the 1960s (Townsley 1988), and with the Yora (around 230 people in 1999 – SIL 2006) in the 1980s (Shepard 1999). The sedentary settlement of the Chitonahua (around 150 people? – SIL 2006) began ten years ago and is still in process (Carid Naveira & Perez Gil 2002, Shepard 1999).

Lastly, the Amahuaca we worked with form a small community (50 people in 1998), which has fled very far from its native region, after a period of slavery during the rubber boom, and eventually the murder of their boss Carlos Sharff, in 1909. They wandered through hostile, unknown territory to seek a new settlement, near mixed-blood people, and remained completely isolated from the rest of their tribe (Wigdorowicz 2002).

Methods and Contrasting Results

The research, granted by the European Commission (DG-Research), was interdisciplinary and brought together anthropologists, botanists and ethnobotanists from Brazil, Peru, France and Belgium. The anthropologists began first, for long term fieldwork. They worked in parallel, each of them with a specific ethnic group. They used a standard method, basically participant observation and open-ended interviews, completed by in-depth semi-structured interviews. Later, they were joined each in turn by the botanist and ethnobotanist teams who carried out a one-month systematic survey among each ethnic group.

These surveys in forest plots had to be used as a reference sampling for further comparative work. Since our research objectives were more qualitative than quantitative, priority had been given to an intensive inventory which could include vines as well as trees, so we opted for a low minimum diameter at breast height (DBH) rather than a large number of plots (Martin 1995). The plots were transects of 50 x 4 m., located in primary or late secondary forest within a 90-min walk of the settlements, in which all plant individuals with a DBH of 2.5cm and above were tagged and identified, and indigenous informants were asked about them. In addition, a subsidiary inventory also included plants of smaller DBH, but of greatest interest for ethnobotanical analysis and intra- or inter-ethnic comparison. It included juvenile trees as well as shrubs, vines, herbs, epiphytes and even non-vascular plants, pointed out by the ethnobotanist, the anthropologist or the indigenous informants themselves, either in the transects or in the fallows and forest pathways.

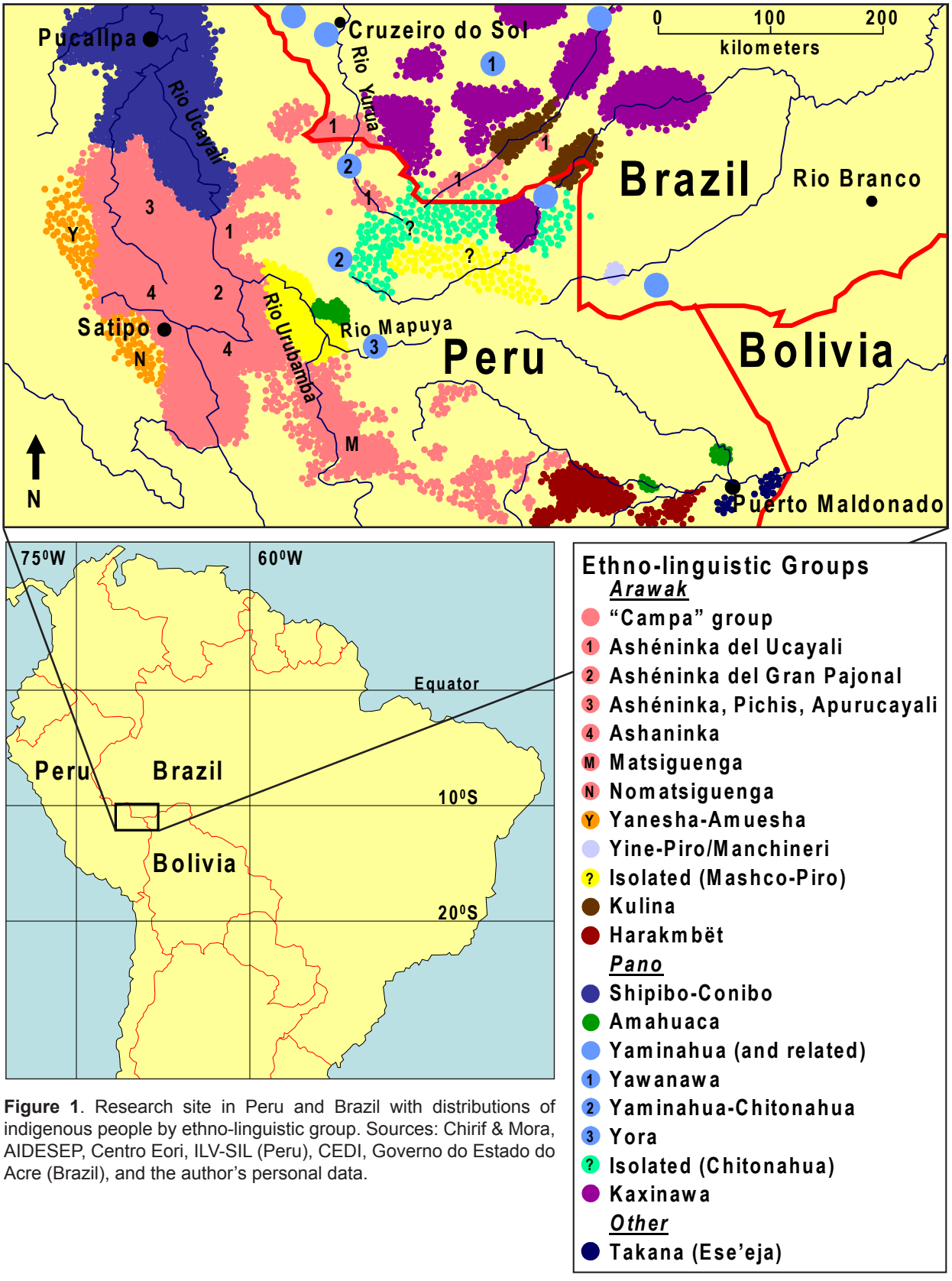

Figure 1. Research site in Peru and Brazil with distributions of indigenous people by ethno-linguistic group. Sources: Chirif & Mora, AIDESEP, Centro Eori, ILV-SIL (Peru), CEDI, Governo do Estado do Acre (Brazil), and the author's personal data.

After botanical identification, the first analysis of the raw data was done in a twofold way. On the one hand, it appeared very soon that each indigenous group had its own distinctive knowledge. The favorite medicinal plants are quite different. The specific uses, and the forms of use, are not the same. It might even be spoken of a clear variety of "ethnic styles", but I will return to this point below.

On the other hand, the ethnobotanical knowledge of each ethnic group has been quantified, according to basic criteria (registered specific indigenous name if any, record of one or more specific uses if any, and categorization of the recorded uses), added with a record of remaining information (useful parts of the plant, combination with other plants, preparation and forms of use, effect, season and frequency of gathering, ecological management, marketing). Table 1 presents the results for the first two criteria, i.e. the rates of mentioned specific uses and plant names, used as a quantitative indication of each ethnic group's overall knowledge (Alexiades 1996, Martin 1995).

The first case is a little peculiar. As mentioned above, the Amahuaca have fled very far from their native region, they remained completely isolated from the rest of their tribe, and such a disruptive history led them to lose a part of their ancient knowledge (see for instance the borrowing of Spanish plant names for 9.5% of their useful plants).

Nevertheless, the Amahuaca are quite an exception. By contrast, the Shipibo, Yaminahua-Chitonahua and Yora, and even more the Ashéninka-Asháninka reach impressively high rates of botanical identification.

Usually, this kind of comparative table is regarded as a first, rough indication about the respective levels of each people's overall knowledge: basic ethnobotanical knowledge means for us the ability to identify plants species and to use a large scope of them for specific purposes. The results seemed thus to be quite conclusive.

However, we were confronted with repeated, inescapable discrepancies between our anthropological and ethnobotanical sets of field data. Indigenous people did absolutely not assess the same issue in the same way. The question arose first among the Ashéninka. Either spontaneously or prompted, they constantly assert that people who really know about medicinal plants (much more than the Ashéninka themselves!) are actually their Shipibo neighbors.

I. Ashéninka / Shipibo

Anthropological findings and ethnobotanical measurements

Such an assessment is even more surprising in relation to the characteristics of the Ashéninka and Asháninka. Peruvian people usually deem them to be very rebellious. Their history is strewn with wide armed uprisings, and for a long time they fought quite successfully against repeated colonization endeavours undertaken by the Peruvian state, by the Spanish conquistadors and missionaries (Rojas Zolezzi 1994, Varese 1968), and before this, by the Inca empire (Renard-Casevitz *et al*. 1986; Renard-Casevitz 1993). Even in more peaceful situations, there is clear evidence of their inclination for autonomy and strong ethnic pride. They should therefore be expected also to have a high opinion of their own knowledge about plants and healing.

However, it is the contrary: "Who really knows about plants are the Shipibo." According to our botanical measurements, such a statement does not make any sense at all. The Shipibo informants had identified much fewer plants by name or use (87.6 %) and recorded far fewer uses (86.1 %) than the Ashéninka themselves (respectively 98.7 % and 97.0 %, see Table 1), and actually they maintain less everyday contact with the forest.

One could argue that general ethnobotany is not medicinal ethnobotany, and ask for more accurate criteria. Even so, the Ashéninka rates are higher than the Shipibo ones. Table 2 compares the respective rates of "medicinal uses", firstly in the biomedical sense (i.e. all uses supposed to have some pharmaceutical efficacy, either actual or not), and secondly in the indigenous sense (i.e. includ-

Table 1. Overall ethnobotanical knowledge (indigenous plant name and reported uses) for five indigenous ethno-linguistic groups in Peru. Reference samples are the number of plant species presented for identification by informants from a random selection from a forest plot in the same community.

Ethnic group	Reference samples examined	Samples identified by name and/or use(s)		Samples reported with specific use(s)	
Amahuaca	302	180	59.6%	179	59.3%
(including Spanish names)		199	65.9%	179	59.3%
Ashéninka-Asháninka	601	593	98.7%	583	97.0%
Shipibo	258	226	87.6%	222	86.1%
Yaminahua + Chitonahua	378	359	95%	353	93.4%
Yora	510	480	94%	460	90.2%

Table 2. Ethnomedicinal use rates in both biomedical and indigenous senses for five indigenous ethno-linguistic groups in Peru. Reference samples are the number of plant species presented for identification by informants from a random selection from a forest plot in the same community.

Ethnic group	Samples with specific reported use(s)	Medicinal uses I		All reference samples examined	Medicinal uses II	
		biomedical sense	indigenous sense		biomedical sense	indigenous sense
Amahuaca	179	45.1%	51.7%	302	26.7%	30.6%
Ashéninka-Asháninka	583	60.1%	80.4%	601	58.3%	78.0%
Shipibo	222	58.7%	83.1%	258	50.5%	71.5%
Yaminahua-Chitonahua	353	74.5%	88.1%	378	69.6%	82.3%
Yora	460	55.9%	60.7%	510	50.4%	54.7%

ing also a wide set of uses and effects we usually deem to be "magic" or "irrational", but that indigenous people do not distinguish from the rest of medicine: shamanic hallucinogens, hunting magic, protection against harmful spirits, enhancing of children's skills, seduction medicines, and so forth).

A comparison between Shipibo and Ashéninka is informative. The medicinal uses I column (Table 2) gives the rates calculated on the basis of samples with reported uses. In this case some Shipibo's scores are a little higher (58.7% and 83.1% vs. 60.1% and 80.4%), which fits in with some specialization in medicinal skills. Nevertheless, this specialization does not mean a general wider knowledge of plants, it is merely due to some disregard for the other kinds of uses, as shown in when medicinal uses are calculated on the basis of all reference samples, i.e. referring to the whole random sampling in the forest plots, all the Shipibo's scores are lower again (50.5% and 71.5% vs. 58.3% and 78.0%). From a quantitative standpoint, Shipibo's medicinal specialization is thus nothing but a subtractive result, so to speak, due to some lack of interest in the rest of ethnobotanical knowledge.

From a qualitative standpoint, Shipibo's therapeutic superiority is not convincing either. I cannot prove this statement in a strictly scientific way. We did not test the effectiveness of any medicinal plant we discovered or registered: it was outside the scope of our research, and besides we committed ourselves to a total protection of the indigenous intellectual property rights, so that the links between indigenous uses and botanical identification remain absolutely confidential. However, in my opinion some particulars could be considered as significant indications.

On the one hand, coincidences in fieldwork gave us the opportunity to experiment with Ashéninka's medicinal plants. I can testify that some of them are quite efficient, in a strict biomedical sense. I give details about their effect, but I keep the botanical identifications secret, according to our commitment. My first example is about a disinfectant/cicatrizing compress. It was used on a thumb tip cut to the bone. After seven days, the cicatrization was perfectly formed, without any infection. My second example is an anti-inflammatory leaf. I had broken my fibula and my ankle was terribly swollen. With the anti-inflammatory leaves, after a couple of hours the swelling went down spectacularly, directly under the compress. After two weeks, I was able to walk up and down the hills, and to go back to the closest landing strip.

On the other hand, the Shipibo herbal medicines have been well-known for many years. They were widespread beyond the ethnic boundaries through popular handbooks (e.g. Arévalo 1994) and health training programs (one of them, "AMETRA 2001", involved the Amahuaca community with whom we worked). In the Ucayali region, they belong now to the public domain. Some of them are presumably effective too, but as far as I know, none is particularly famous for its outstanding, immediate efficacy in a strict biomedical sense.

From a Western point of view, Shipibo's ethnomedicinal knowledge is thus likely to be neither wider nor more effective than the Ashéninka's. If so, then why do the Ashéninka overestimate it so much? Before addressing this question, I give some details about some concrete implications, in order to substantiate that it means much more than just an abstract comment made for internal social purposes (or for the anthropologist's use): The point is also related to actual borrowing processes.

Past borrowing traces and current change

The ethnobotanical knowledge of most Ashéninka people relies upon a rather exclusive set of plants, uses, and forms of use, which might be called the "currently traditional" Ashéninka knowledge. However, a limited but significant number of individuals tend to refer to other favorite medicinal plants, with other specific purposes and other forms of preparation and even management. In fact, what is clearly at stake there is a process of borrowing in progress. Both items and forms of use are coming from the Shipibo, which is actually the last manifestation of a long history of inter-ethnic exchange: Ashéninka and Shipibo

people have been borrowing from each other for centuries.

There are linguistic traces of ancient and mutual borrowing between Conibo-Shipibo and Ashéninka people. Some of them are clearly related with the Ashéninka migration from the hill regions towards a more riverine habitat, others are not, but it is obvious that unlike the current situation, borrowing was in that time a two-way process.

About animals, for instance, river dolphins (*Sotalia fluviatilis* and *Inia geoffrensis*) are common in the large Ucayali, but they do not live in smaller or rapid streams. Their Ashéninka-Asháninka names, **koshósh(i)ka** or **koshósh(i)ko**, are a borrowing from the Shipibo. Another borrowing from the Shipibo is **manáásawo**, one of the names of the male tortoise (*Geochelone* sp.), for much less conspicuous reasons. In the opposite way, the Shipibo term for such an important animal as the dog, **ochiti**, has been borrowed from the Ashéninka-Asháninka, **otsítsi** or **otsíti**.

Regarding plants, there are traces of the same to-and-fro movements. The Spanish watermelon, "**sandía**", for instance, passed through the Shipibo-Conibo **santira** before its arrival to the Ashéninka, as **santéra** or **santsíra**. In the opposite way (about a crucial medicinal plant), the Shipibo pharmacopoeia includes three kinds of **kamarámpi**, which is the Ashéninka-Asháninka name of "**ayahuasca**" (*Banisteriopsis caapi* (Spruce) Norton, Malpighiaceae, an essential shamanic psychotropic) - for the Shipibo, the term refers to three varieties (i.e. red, black and white) of **ayahuasca** "from the hills", perhaps as a memory of the Ashéninka primary habitat (Leclerc, personal communication).

There are a few more examples (Lenaerts 2004:214-217), but the point is that formerly, sometimes for self-evident reasons, sometimes for more evasive ones, influences and borrowing were flowing to-and-fro between Ashéninka-Asháninka and Shipibo-Conibo people. However, things have radically changed. Currently, the transfer of knowledge happens in a massive scale and in a single direction: it only goes from the Shipibo towards the Ashéninka.

The current situation: who and what?

The change is still in progress, as it appears going into some particulars of the current situation. Borrowing is not an abstract process; it relies upon the everyday agency of concrete individuals. The Ashéninka who are borrowing from the Shipibo are not exactly the common people. Even before making a comparison with the other ethnic groups and perceiving the similarities with the Shipibo ethnomedicine, the peculiar "style" of some individuals was conspicuous. Both in contents and pattern, their knowledge are distinct, especially concerning medicinal plants. At the same time, these individuals also appeared to share another peculiarity. Their personal history was usually characterized by some kind of particular intensive contact with the urban world, through former and current travels, school training by missionaries, collaboration with official health programs, and so forth.

Such intensive contact with the urban world did not entail less skill in ethnobotanical identification. According to ethnobotanical surveys, these "cross-cultural" individuals identify so many plants and uses as the other Ashéninka, but they do so in quite a different pattern. For instance, they tend to confer multiple purposes on several "master plants", some of them being used as a sort of panacea, which is completely inconsistent with the rest of Ashéninka practices. Even without any shamanic skills, they often grow a lot of medicinal plants around the house - besides the "**iwénki**" magic bulbs (*Cyperus* sp., Cyperaceae), the only ones to be usually found near any Ashéninka house. They speak openly about witchcraft and witches' plants, despite the strong prohibition and denial that traditionally govern these kinds of matters in their own ethnic customs. And of course, the "master plants" and other species grown around the houses are distinct from those plants usually stressed by the others, as well as many specific uses reported about wild plants from the forest. Obviously, we were faced with an emerging alternative model of ethnomedicinal knowledge.

All these peculiarities proved later to come directly from the Shipibo, in both a wide ranging and bounded way. It is wide ranging because it affects the very basic pattern of knowledge and management, besides introducing new species and specific uses. It is also bounded, since the inclination of the "cross-cultural" pattern is still a minority, individual option.

This point calls for two further comments to be assessed. Firstly, the new "cross-cultural" knowledge does not come in addition to the "traditional" one. Rather, the new knowledge tends to replace partially the old, as shown in Figure 2. The reduced sampling did not allow a real statistical treatment, but even so the overall trends are conspicuous. The graph displays the rates of intra-ethnic convergence (i.e. with the other Ashéninka data) and inter-ethnic convergence (i.e. with the data from the other ethnic groups) between the basic ethnobotanical items, in this case the specific uses reported to each plant species (the distinct, qualitative patterns of knowledge and management could hardly be digitized, so they are not addressed by the graph). As expected, the "cross-cultural" individuals show higher rates of inter-ethnic convergence (mainly with the Shipibo, which does not appear in this graph). But at the same time, they show lower rates of intra-ethnic convergence, that is to say they share less knowledge with their own people's majority. "Traditional" Ashéninka show the opposite trend. The conclusion is clear: the borrowing of Shipibo's new knowledge also means some loss of the Ashéninka's distinctive knowledge.

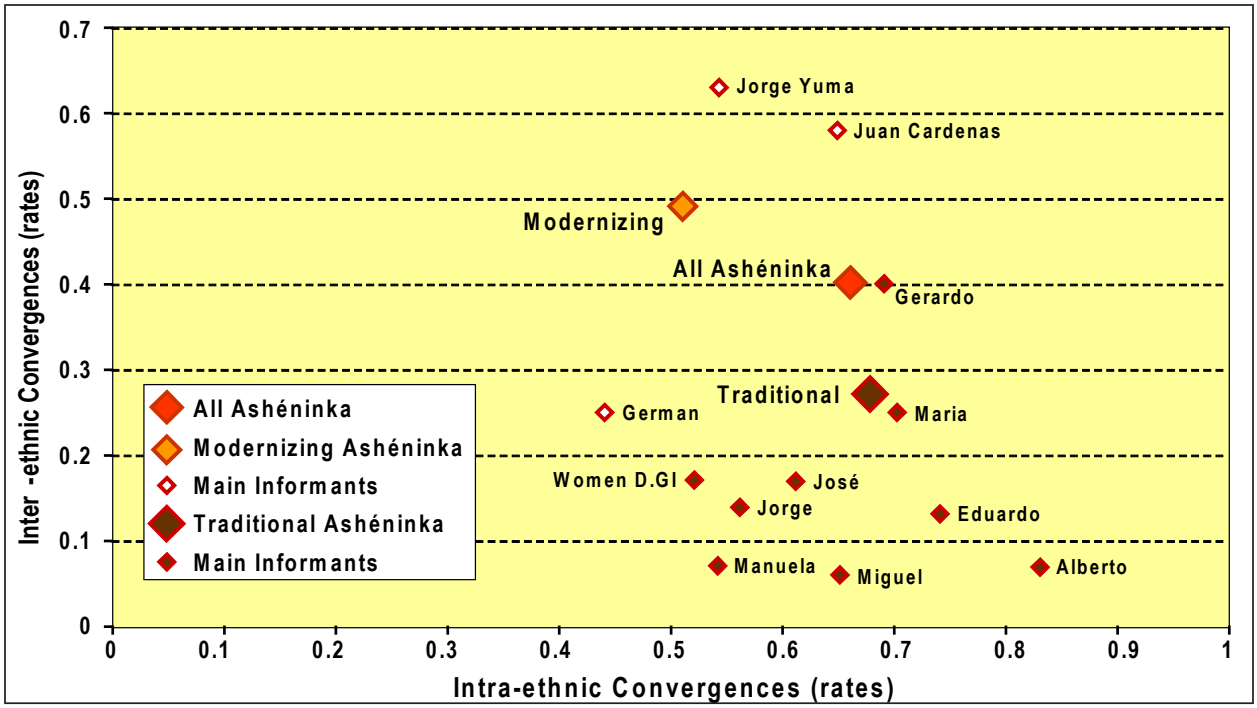

Figure 2. Rates of intra-ethnic convergence (i.e. with the other Ashéninka data) and inter-ethnic convergence (i.e. with the data from the other ethnic groups) between the specific uses reported for each plant species by Ashéninka-Asháninka informants.
Comments: All plant samples from the forest plots were taken into account, providing they were identified at species level and reported with related specific use(s) by 2 informants or more. The basic calculus material was these recorded specific uses, allocated species by species and informant by informant. The basic items are the number of actual convergences, reported to the number of possible ones. The x-axis expresses informants' scores in sharing knowledge within their own ethnic group. The y-axis expresses informants' scores in sharing knowledge with the other ethnic groups. Large date points correspond to the average scores of sub-groups, including all concerned informants. Smaller points correspond to the individual scores of the main informants.

Secondly, there is a question of interpretation level. The "cross-cultural" Ashéninka are characterized by intensive personal contacts with the urban world and knowledge, but their peculiar position within the local ethnomedicinal scope would be poorly described as a mere effect of individual history, or as a simple process of acculturation, leading eventually to a partial loss of ethnic identity. In relation to the wider regional context, their personal "modernizing" choices take another sense for a double reason. Firstly, the main borrowing source is another indigenous group rather than mixed-blood people. Secondly, beyond any personal chance or circumstances, such behavior is anything but exceptional in the Ucayali region.

II. The Whole Regional System

A repetitive pattern

Each indigenous group has its own "style" of ethnomedicinal knowledge and practices as illustrated by the example of Shipibo-Ashéninka borrowing. Once we started with systematic comparative work, the peculiarities of each one appeared on every level.

The favorite medicinal plants are different for each indigenous group. For the same purpose, the healing resources are frequently sought in the same botanical family, but within these families each ethnic group opts for distinct species and often for distinct genera. Some forms of use are distinctive. For instance:

- leaves-and-steam baths with further divination of illness origin, among the Ashéninka.
- multi-purposes medicinal plants grown around houses, among the Shipibo.
- preferential use of leaf rubdowns and compresses, among the Yaminahua, Yora and Chitonahua (Salas 2002).

Beyond roughly similar patterns, detailed etiologies, categorization of medicines and healing targets are rather different, and there are noticeable ethnic variations in the empirical forms of social management of knowledge and shamanic practices.

However, Amazonian "traditional" knowledge is anything but a fossilized one. Variations and changes appear everywhere, within each ethnic group as well as in inter-ethnic relationships. But the point in this case is the way things are changing. It has a strong similarity to the case between Ashéninka and Shipibo. Firstly, there are some traces of ancient borrowing between the other peoples with whom we worked. Secondly, these former borrowing processes seem to have flowed to-and-fro in multiple directions. Thirdly, borrowing is restricted nowadays to a single one-way process.

Borrowing chains

Ashéninka people borrow from Shipibo people, but in turn, part of their own medicinal knowledge is borrowed by a next people, namely the Yaminahua, who remained isolated until the 60's, and are ancient enemies. The Ashéninka do not have a very high opinion of Yaminahua botanical and shamanic knowledge. Actually, the Ashéninka feel some reluctant admiration for the usually more rubust stature and physical vitality of the Yaminahua. One single plant was shown me as a "Yaminahua's one", "**ts(i)roitopári**" (n.i.), which is used "by their women to be fat and get a thick skin; and by the men too, to be tall and strong."

But the Yaminahua are learning from the Ashéninka. On the river Yurua, Yaminahua women pay frequent visits to the shaman of Nueva Victoria, in order to learn his steam bath technique, which is distinctive of the Ashéninka. On the river Mapuya, the Yaminahua from Raya recall that when they accepted foreign contact and sedentary life, they learned the fabrication of manioc beer from the Ashéninka, and bought them their first "**piri-piri**" magic bulbs too (*Cyperus* sp., Cyperaceae). Nowadays, manioc beer is paradoxically counted as one of the most distinctive Yaminahua cultural features ("they brew very huge amounts, and it is a very strong one", the Ashéninka say). The new manioc beer had a great impact on **ayahuasca** consumption, according to the Yaminahua themselves. During their wandering life in the forest, until the 1960s, "adults used to have **ayahuasca** almost every day", but currently the psychoactive brew is partially given up, which is explained by the quantities of manioc beer they have learned to drink. The two substances are considered as opposite (Carid Naveira & Perez Gil 2002).

In Raya, **ayahuasca** preparation has become thus an almost exclusive speciality of a fourth people, the Chitonahua. Part of them still live isolated in the forest, but ten years ago small nuclear family groups began to come out and settle among the Yaminahua, with whom they share the same dialect and most cultural features. In their new sedentary settlement, they continue preparing **ayahuasca**, but the brew composition seems to have changed. Formerly, Chitonahua people did not always add "**chacruna**" leaves (*Psychotria viridis* R.& P., Rubiaceae), which is the actual hallucinogenic ingredient. Now they do, explaining that it is due to Yaminahua influence (Carid Naveira & Perez Gil 2002). Moreover, it is noteworthy that the Chitonahua are probably following in the Yaminahua's wake, 35 years later. According to the Ashéninka, Yaminahua rather than Chitonahua are the people who "cannot prepare good **ayahuasca**, they do not add **chacruna**, it does not open the view" - a contemptuous criticism substantiated by direct experience (Yaminahua neighbors had prepared a bad-quality brew, too weak and without hallucinogenic effects). Characters change, but the story is the same.

To be complete, similar one-way borrowing processes are also to be noted among the fifth and sixth ethnic groups we worked with, the Yora and the Amahuaca (Tello 2002, Wigdorowicz 2002). The Yora were contacted and drawn to sedentary settlements in the 1980s, and have the same kind of relationship with another Yaminahua group, which had settled some decades earlier around the Dominican mission in Sepahua. These Yaminahua first comers are said to have taught them the preparation of both manioc beer and **ayahuasca** (which substituted for other psychoactive plants). And among the last group, the Amahuaca healers from Boca Pariamanu have borrowed an important part of their current knowledge from Shipibo trainers who helped them to "revive their traditional native medicine": as stated before, this small group eventually stayed closely surrounded by Peruvian mixed-blood settlers and had lost a great part of its ancient ethnomedicinal knowledge.

Massive change

Some of the mentioned situations could be directly related to a real loss of knowledge, as in the Amahuaca case, or to the objective needs of a new way of life. Sedentary settlement could be a reason for change. For instance: Deshayes (2002) argues that in many cases, the prior concern of **ayahuasca** consumption was not with hallucinogenic visions (induced by the *Psychotria viridis* additive), but with experience of fear (induced by *Banisteriopsis caapi* alone), which in a hunting way of life is directly related to the attention paid to the forest dangers. That could help the Yaminahua and Chitonahua to adopt a new composition of the brew: settled farther from the forest dangers, they might learn the use of the hallucinogenic additive.

Having said that, I think the rest needs further explanation. In the many other cases, a distinctive ethnobotanical or ethnomedicinal tradition tends to be replaced by a new one. Let me emphasize again that the process is anything but peripheral. The transfer of new plants and techniques often means substantial changes in everyday life. For instance, among the Yaminahua, the adoption of manioc beer is related to a decreasing consumption of **ayahuasca**, and thereby to a new allocation of shamanic skills,

which are tending now to become a matter for specialists, though formerly every man used to get at least a beginning of shamanic training. Manioc beer of course is not the cause of change, but obviously it takes part in the appearance of a quite new configuration.

The same could be said about the **piri-piri**. Both plants and management model were borrowed from the Ashéninka. **Piri-piri** are cultivated plants, grown around houses, mostly by women. They belong personally to the individual who planted them. Each of them has a specific use, but in fact, all varieties look very much alike, which helps to keep the secret. Such a domestication of medicinal plants by women was completely new for the Yaminahua: they used to gather wild plants in the forest, it was a mostly male speciality, and the only restriction of access to these resources was each man's personal knowledge. The point is that such a total inversion of the former management model tends now to extend far beyond the initial borrowed species: Yaminawa women begin bringing wild medicinal plants back from the forest and planting them around their houses, just as they learned to do with **piri-piri** (Carid Naveira & Perez Gil 2002). It is a complete reversal of former customs.

From the urban to the forest

Ethnomedicinal borrowing in the upper Ucayali region is shaped in a very repetitive pattern. There is a chain of inter-ethnic relationships (Figure 3), from the Shipibo to the Ashéninka, from the Ashéninka to the Yaminahua, from the Yaminahua to the Chitonahua, and the same occurs from another group of Yaminahua to the Yora, and from the Shipibo to the Amahuaca, that is to say, always from the urban to the forest side. Centrally, we find the Shipibo, who are living very close to the urban people (their main village is actually a suburb of Pucallpa (the second largest city of Peruvian Amazon) and they are very skilful in trading with non-indigenous people), but maintain a conspicuous indigenous identity, through distinctive clothes, shamanic reputation (and commodification), and so forth. Ethnomedicinal borrowing flows then by degrees to the groups who have less intensive contact with the surrounding society.

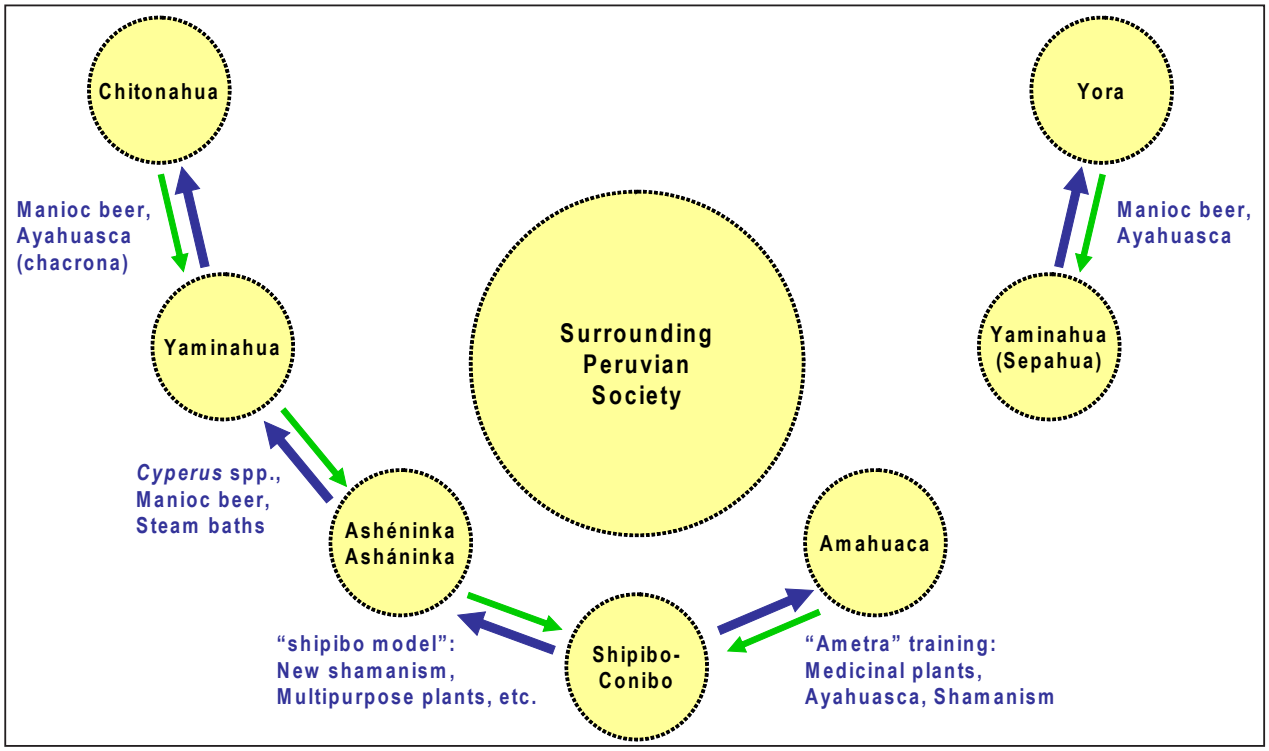

Figure 3. Chain of current inter-ethnic borrowing among selected indigenous ethno-linguistic groups in Peru.

Yora — Knowledge system characteristic of each ethnic group, including cognitive components as well as symbolic context, productive practices and specific forms of allocation and social management of knowledge.

→ Direct reference to indigenous neighbours deemed to "know plants and medicines better than we do" - which is often quite inconsistent with objective ethnobotanical findings.

← Inter-ethnic borrowing (this includes adoption of new items, but also new pragmatic or symbolic configurations, new forms of knowledge, etc. - all of them are related to "indianness").

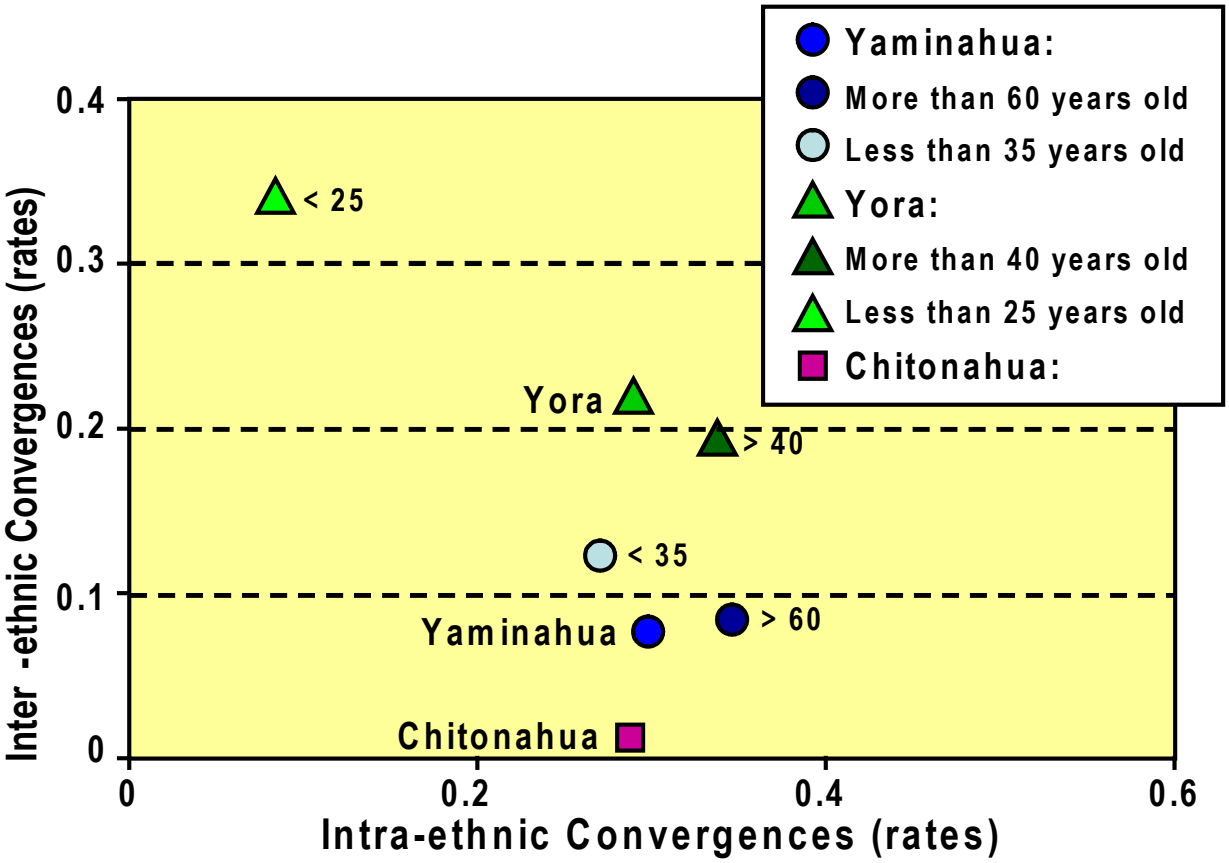

Figure 4. Rates of intra-ethnic convergence between the specific uses reported for each plant species by Yaminahua, Chitonahua and Yora informants.
Comments: Regarding the Yora, Yaminahua and Chitonahua (who are linguistically and culturally closely related), the criterion to define the sub-groups is the date they engaged in permanent contact and sedentary life, reported to informants' age. The opposition is between the people who were fully grown before this time and the youth born or grown afterward. At the research time this meant more than 60 or less than 35 years olf for the Yaminahua, and more than 40 or less than 25 years old for the Yora. By definition, all Chitonahua, who were just engaging in sedentary life, belong to the "pre-sedentary" side. The dispersion pattern of the sub-groups is remarkably similar to that of the Ashéninka-Asháninka's. (see Figure 2).

Figure 4 presents the inter- and intra-ethnic convergences among the Yaminahua, Chitonahua and Yora (a similar analysis was not possible among the Shipibo and Amahuaca, since personal data about informants were insufficient to distinguish between relevant subgroups). It shows that knowledge borrowed from indigenous neighbors also tends to substitute distinctive "traditional" ethnic knowledge. When the rates of inter-ethnic convergences increase, they do so at the cost of the rates of intra-ethnic convergences, just as they do among the Ashéninka. The repetition of the pattern is conspicuous, but some comments are necessary to avoid any misunderstanding.

Firstly, I do not wish to be too systematic. The borrowing system I present here (Figure 3) is not at all assumed to be a general rule. Very probably, in the same region, some other inter-ethnic relationships are oriented in an opposite way. For instance, Ashéninka people in general have very little regard for the "wilder" Yaminahua knowledge, but, by contrast, those from Brazil have the highest opinion of the ethnomedicinal and shamanic skills of the Kulina, whom they also deem to be "wilder" and closer to the forest.

The second point is more significant for an interpretation. The overall outline of this borrowing system is perhaps surprising, when considering the combination of three characteristics shared by the peoples we worked with. Except of the Amahuaca, they all have a similar level of ethnomedicinal knowledge. Nevertheless, when going into particulars, each of them is characterized by a number of distinctive features, ranging from favorite plant species to particular forms of use and knowledge management, i.e. from item details to conceptual and social frameworks. Lastly, all of them are undergoing similarly increasing contact with the surrounding society. The first thing we might

expect would be parallel changes, grounded and shaped in quite a direct relationship with this surrounding society.

However, it is not the case at all. Rather, the main changes happen through some indigenous intermediary, and prove to be indirect and ambiguous. On the one hand, in the whole system, the current borrowing processes have a conspicuous one-way orientation. The crucial indigenous people are the next ones on the "civilization" side, i.e., those neighbors who have more intensive contacts with the surrounding society. Their distinctive knowledge is often overestimated and massively borrowed. Obviously, the mixed-blood society is here a crucial focus of attraction, but there is no process of assimilation at all, since on the other hand, all borrowed plants, uses and management models share a noticeable peculiarity: for anybody from this region, **ayahuasca**, shamanic practices, manioc beer, steam baths and **piri-piri** are characteristic of an almost emblematic indigenous identity. The actual result is thus a closer proximity to urban people, though keeping very clear indigenous features.

Indigenous people never will give us explicit reasons for these kinds of choices, but the previous analysis of borrowing patterns and mechanics leads to an explanation. What is at stake here is a question of collective identity, that is to say the construction of a defined place in a shared inter-ethnic system, much more than something we should call therapeutic efficacy.

For us, such a thought reveals a sort of "confusion" between collective identity, inter-ethnic relationship, and medical efficiency. However, we have no reason to suspect the indigenous sincerity. Health is a major concern among them, and what is borrowed from the neighbors has to be used in the flesh. When comparing respective medicinal skills, the seemingly "inconsistent" hierarchy they build is nothing but their own way to assess what they deem to be actual therapeutic efficacy.

Discussion

Relational dimension and pharmaceutical efficacy

Probably this indigenous approach sounds very strange, but despite all appearances it is anything but ingenuous. The mixed-blood society is a central focus of attraction, but that does not mean blind attraction or unreserved trust in the power of Western medicine. After all, these people manage to conserve their own forms of healing, and to keep shaping any borrowing into their own features and categories which are indeed quite different from the biomedical ones.

For biomedicine and classical Western ethnobotany the healing power of a medicinal plant belongs to the world "out there." It relies on material substances, and usually the attention paid to the local forms of ethnobotanical use is nothing but a technical way to discover the working of active chemical principles, and maybe enhance their efficacy. Both the plants and the related knowledge are managed as mere objects. They may be bought, borrowed and transferred independently of the people they come from. They even must be "isolated" (the plant from the people and the context, and the active substance from the plant), in order to be scientifically tested and prove their therapeutic efficacy.

By contrast, in the Amazonian approach, knowledge and plant efficacy do not rely primarily on substances, but on relationships. Neither the plant nor the knowledge may be separated from people and relational contexts. This is grounded in the idea that the power of a medicinal plant is not so different from the power of any other living being: it is a will. Actually, from their own point of view, plants as well as animals or human people are various kinds of persons, each of them characterized by a specific intentionality (Descola 2005, Viveiros de Castro 1998, and about the Ashéninka, Lenaerts 2006). I cannot develop this particular thought here. But regarding medicinal plants, the consequences are easy to understand. Their healing power comes from their respective position in an overall network that includes plants as well as human beings.

That is the reason why the most interesting ethnomedicinal plants are deemed to be those from people living closer to the urban society. Almost independently from their objective pharmaceutical efficacy, those plants must be powerful, because Western or mixed-blood people are obviously powerful, and indigenous people who succeed in living close to them but resisting their dangerous proximity must be too. Borrowing has to be understood here as a quest for a balanced compromise between the dangerous but fascinating power of the Other, and the well known security of the Self. Real health depends on your place in the world, i.e. your interconnection with other living beings, rather than on a local chemical reaction in some particular part of your body.

We are very far from the classical biomedical approach here. Having said that, I would note that emphasis on the relational background of medicinal resources and knowledge is not so unusual, even in our own societies. The lightning success of "Airborne" medicines in United States could be an excellent illustration (I am grateful to Jan Salick for suggesting the example). These products (Airborne 2006) have not been evaluated by the American Food and Drug Administration, so that officially they are "not intended to diagnose, treat, cure or prevent any disease". Nevertheless, their huge success relies primarily on non-medical personal recommendation and on the consumer's representations about their source references:

- namely, the inventor, who casts herself as a middle-class woman "just like you and me"

- a clever mixture of old exotic tradition (a “Chinese medicine text”, “estimated to have been drafted in 200 a.d.”).
- home-rooted safety (“To ensure safety, purity and potency, we do our herbal extracting in America”; “copy cat products may be using imported powdered herbs of sometimes questionable origin” (sic).

Consumers seem to be satisfied and their confidence in such (merely) relational arguments probably takes some part in the healing process. In fact the relational dimension is present in Western healing practices too but, in a similar way to psychosomatic effects, it remains peripheral and poorly known (biomedicine has few means to explain their empirical efficacy). Among indigenous people from Ucayali, by contrast, the relational dimension is the crucial point.

Implications in development policies

The peculiarities of the inter-indigenous borrowing system I described entail some pragmatic consequences for development policies too. Western or national governmental and nongovernmental organizations are usually keen on conservation of traditional ethnobotanical knowledge. They often try to protect and strengthen it through direct intervention as “ethnomedicinal revival programs”. The intention is laudable, but the implementation could lead to paradoxical counterproductive effects.

Despite the high levels of knowledge we still found almost everywhere (see Table 1), there is indeed a real risk of hidden impoverishment. The distinctive knowledge of each ethnic group tends to be substituted by a new one coming from some of their neighbors. This homogenization process is flowing from the urban to the forest, which entails an increasing diffusion of very widespread and well known plant uses at the expense of local diversity.

The direct intervention of outsiders can hardly stop or restrain this trend, since its mainspring is precisely an increasing Western pressure on indigenous everyday life. Paradoxically, the physical presence of foreign advisors who recommend the revival of traditional ethnobotanical knowledge is likely to produce the opposite result. In fact it means a closer Western presence, and indigenous people’s reaction is likely to be an increase in borrowing from their “Western-side” neighbors. This is not just a theoretical assumption. Such a revival program was precisely carried out in some Ashéninka settlements during our field work. The contents of the training were restricted to the knowledge most commonly shared in the region, and the sessions were attended by “modernizing” political leaders and “cross-cultural” individuals, but not by the shamans who are the real specialists.

In fact, direct intervention is likely to make sense only in cases of substantial loss, as among the Amahuaca. But even in this particular case, the process apparently needed to be reshaped in indigenous terms. The revival of their “native” ethnomedicinal knowledge is partially due to a volunteer intervention of Shipibo trainers. However, the healers do not report it as learned from the Shipibo, but as taught by their own dead ancestors, through visions and dreams. In a first step, it might be referred to as an expression of ethnic pride (transmission from Amahuaca to Amahuaca), but nowadays such an explanation does not make sense. since the new generation is learning directly from Amahuaca healers. Nevertheless, they still refer to dreams and visions from the ancestors. The point is that, very probably for cosmological reasons, Amahuaca dead people have to be included in the knowledge network too (Wigdorowicz 2002). The relational ties may not be cut, and in fact they are constantly manipulated and reconstructed.

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